



Microzooplankton grazing in Arctic waters

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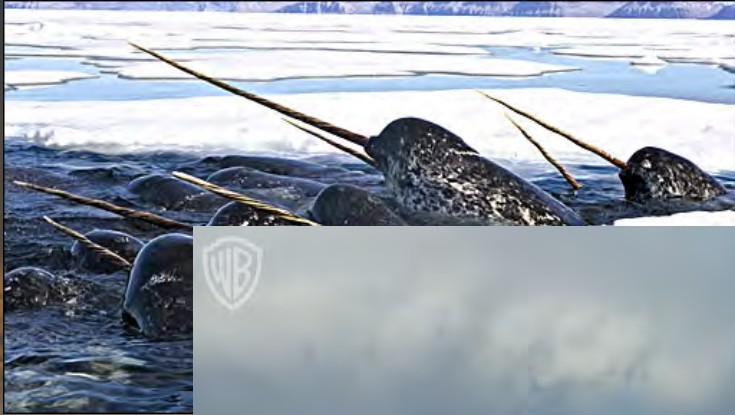
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Microzooplankton grazing in Arctic waters

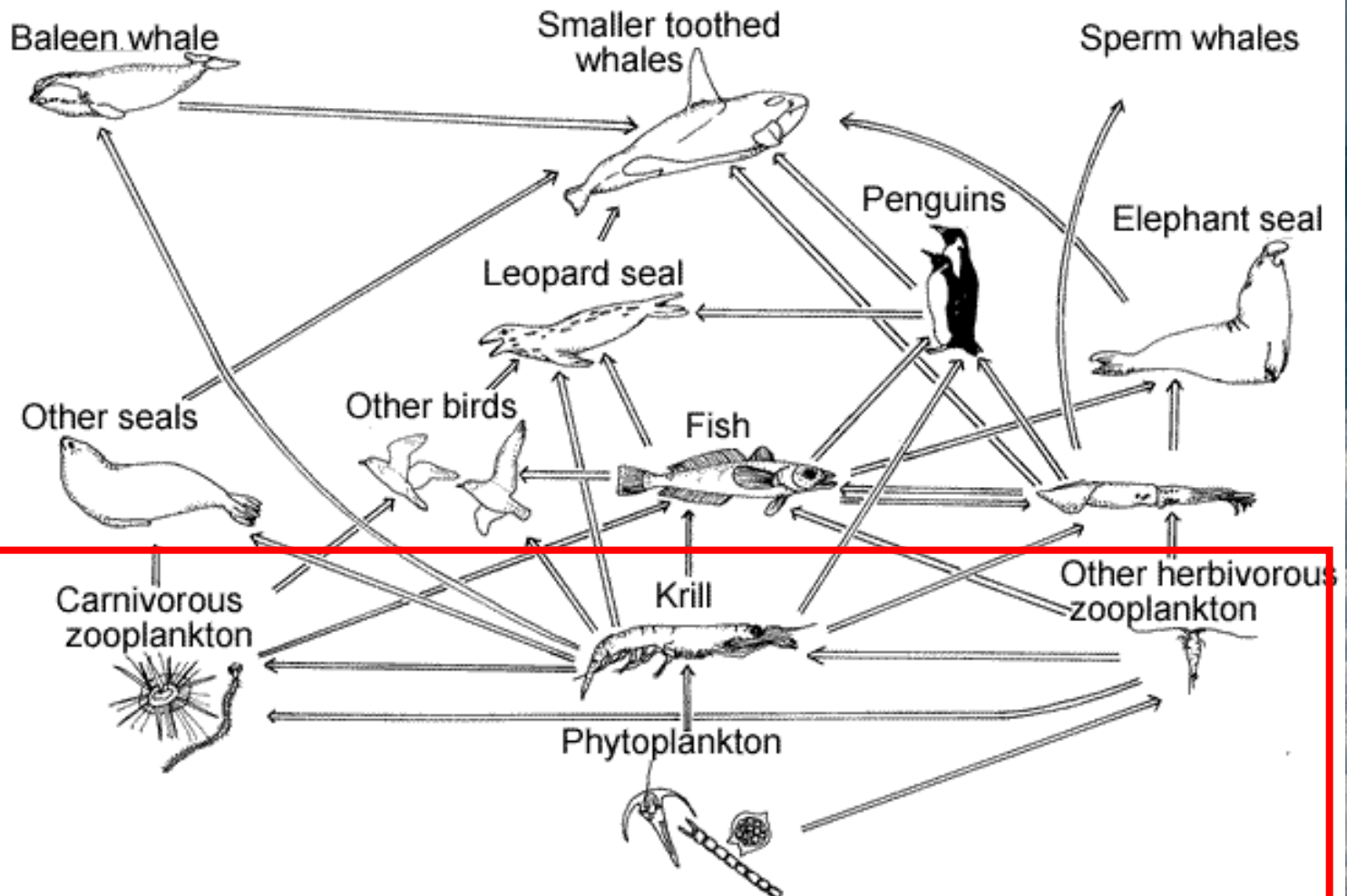
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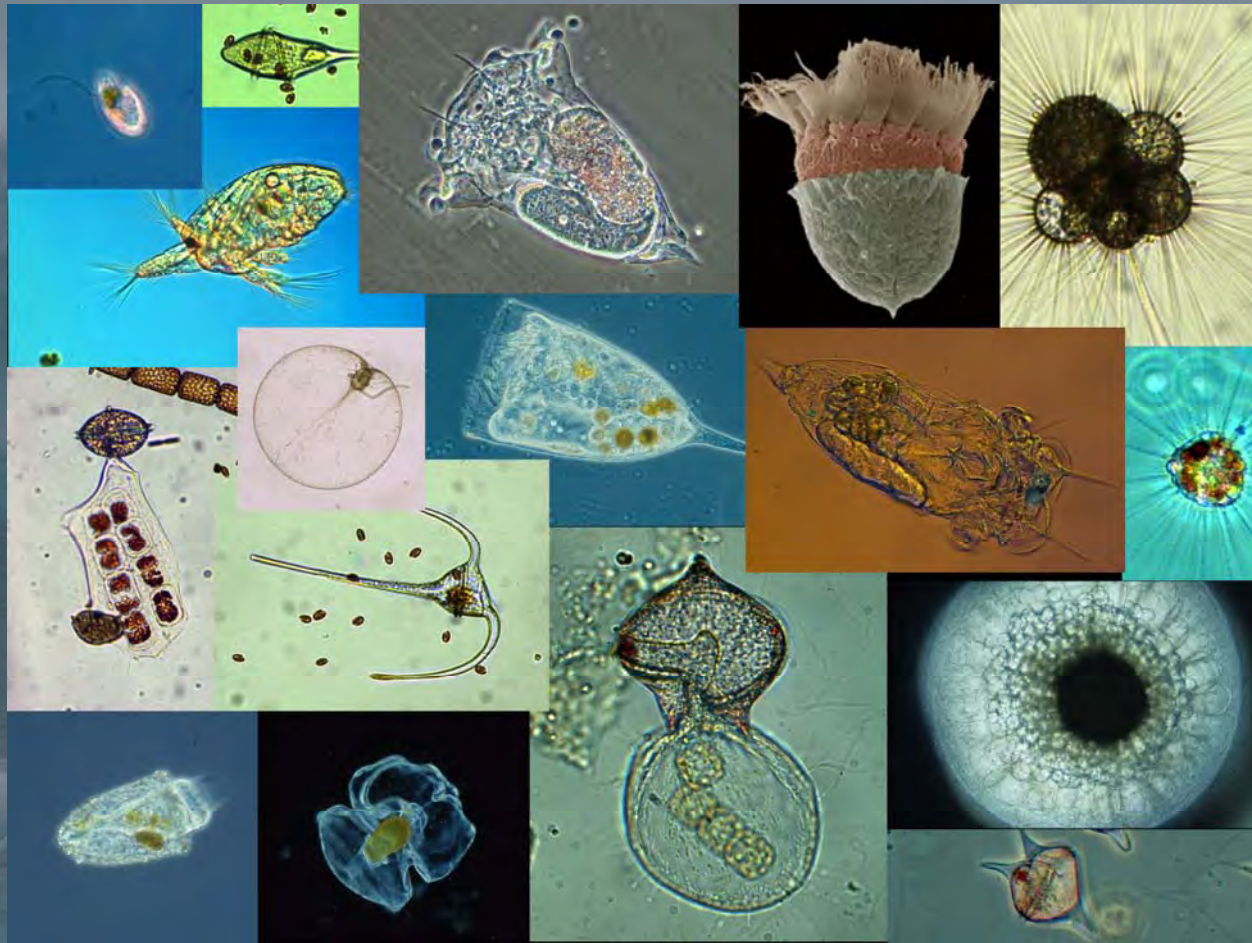
Global warming is seriously threatening Arctic wild life



What about plankton?



Here we will focus on microzooplankton, and
on their role as grazers of phytoplankton

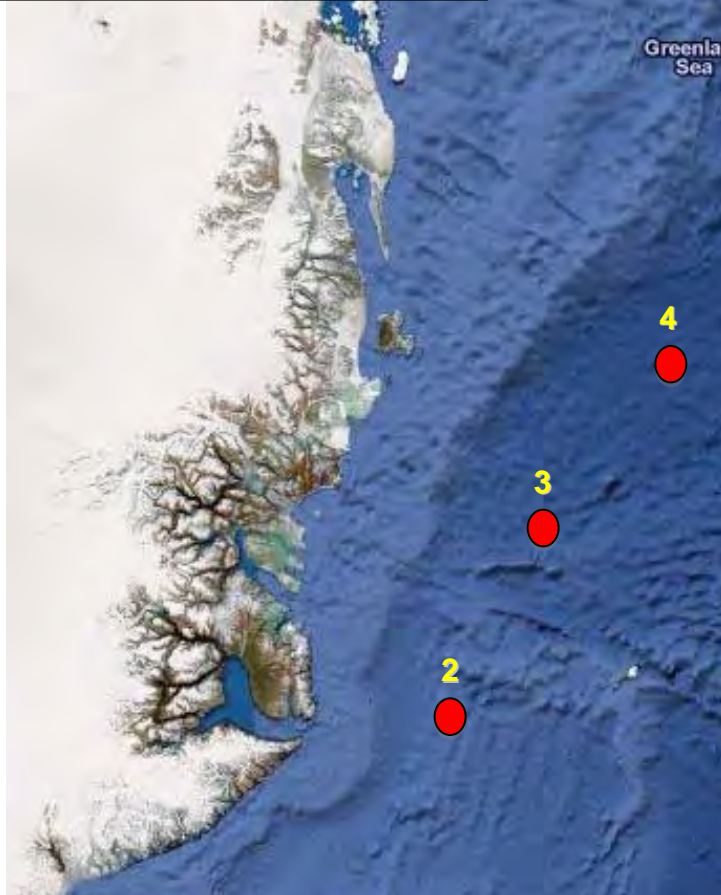
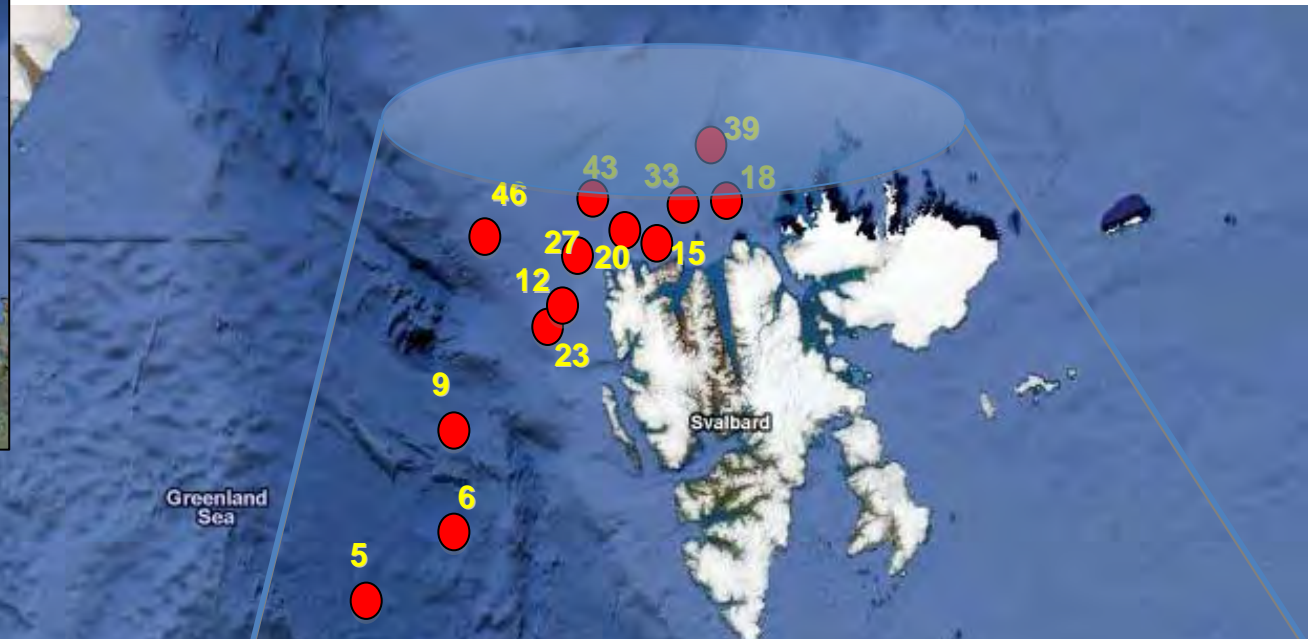


July 2007

- Structure of the microplankton community
- Microzooplankton grazing (dilution technique; Landry and Hassett 1982)

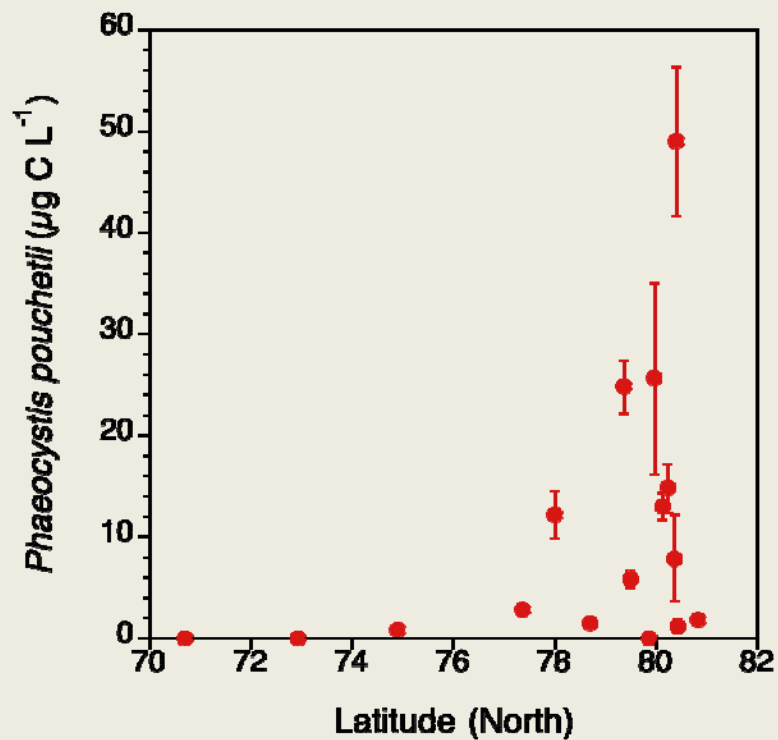
June 2010

- Phytoplankton mortality rates (grazing)
- Phytoplankton instantaneous growth rates
- Phytoplankton net growth rates

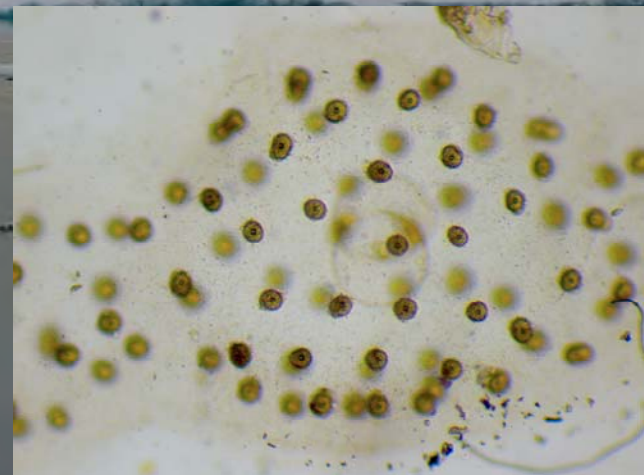
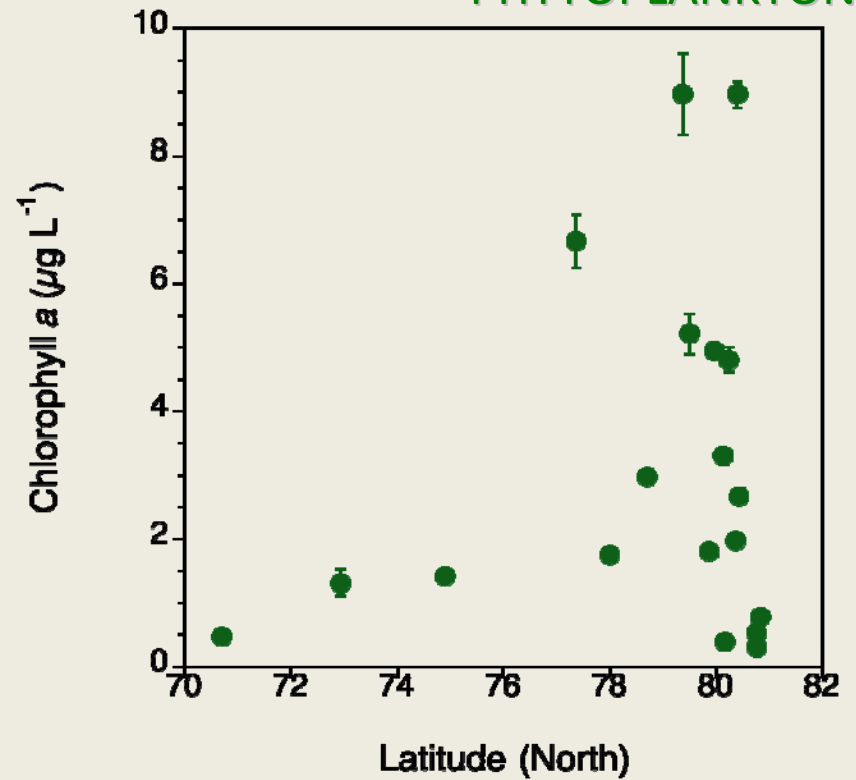




P. pouchetii

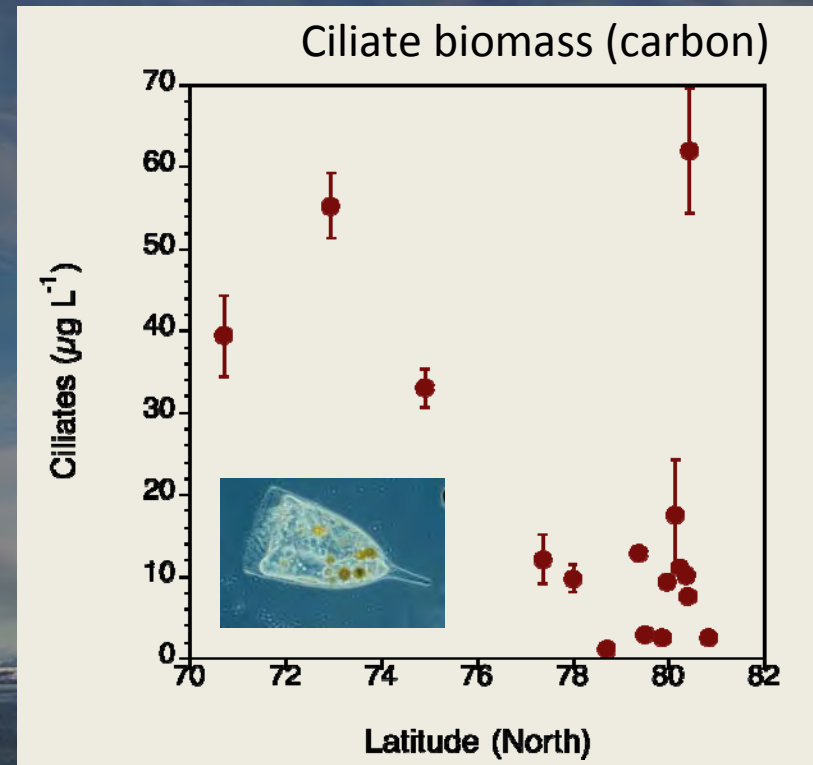
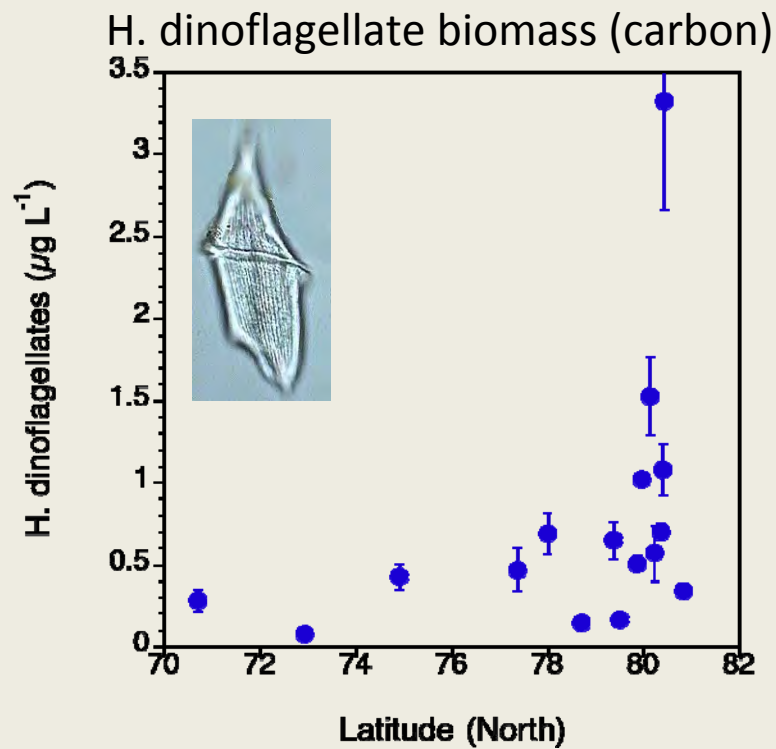


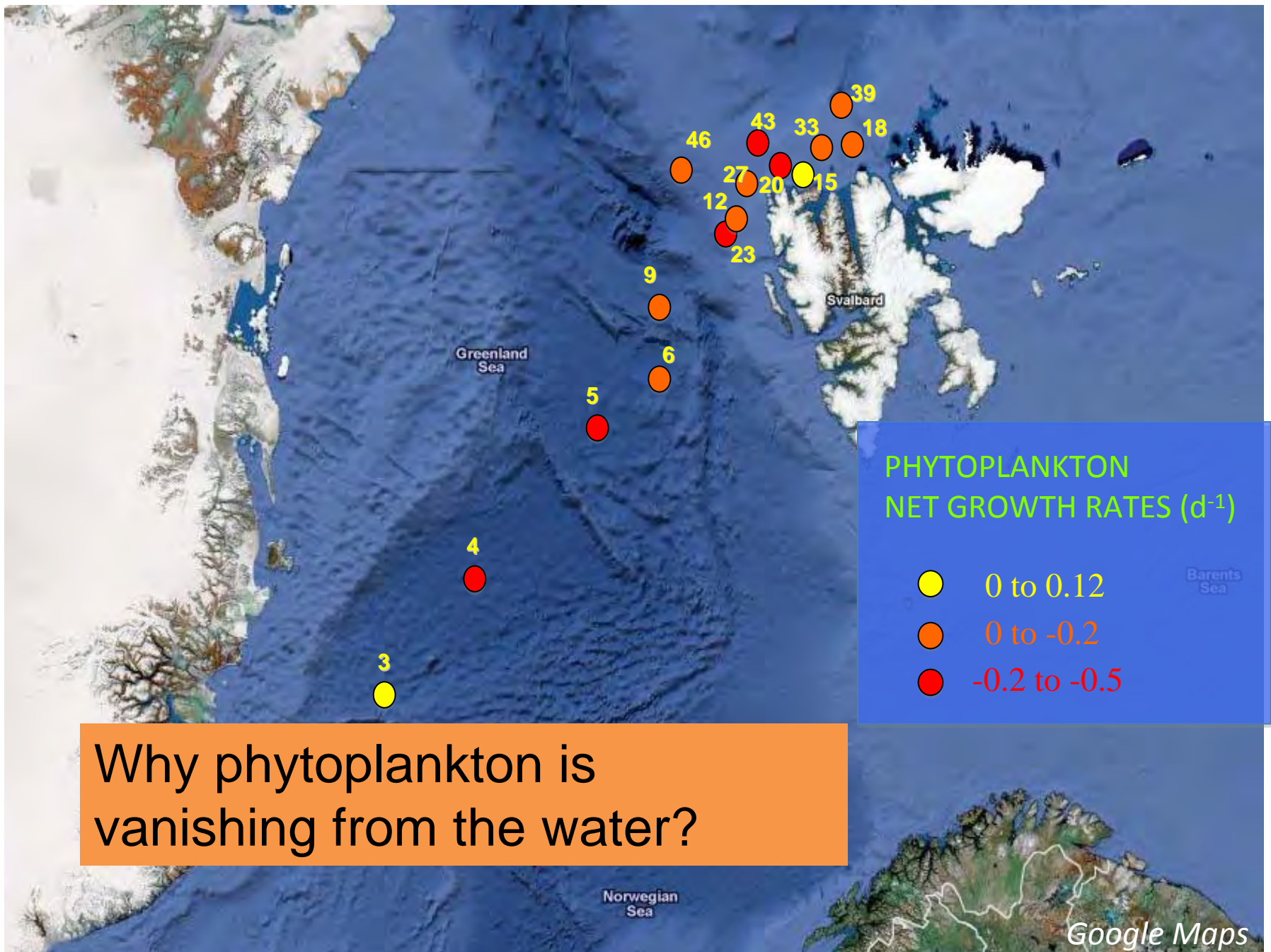
PHYTOPLANKTON



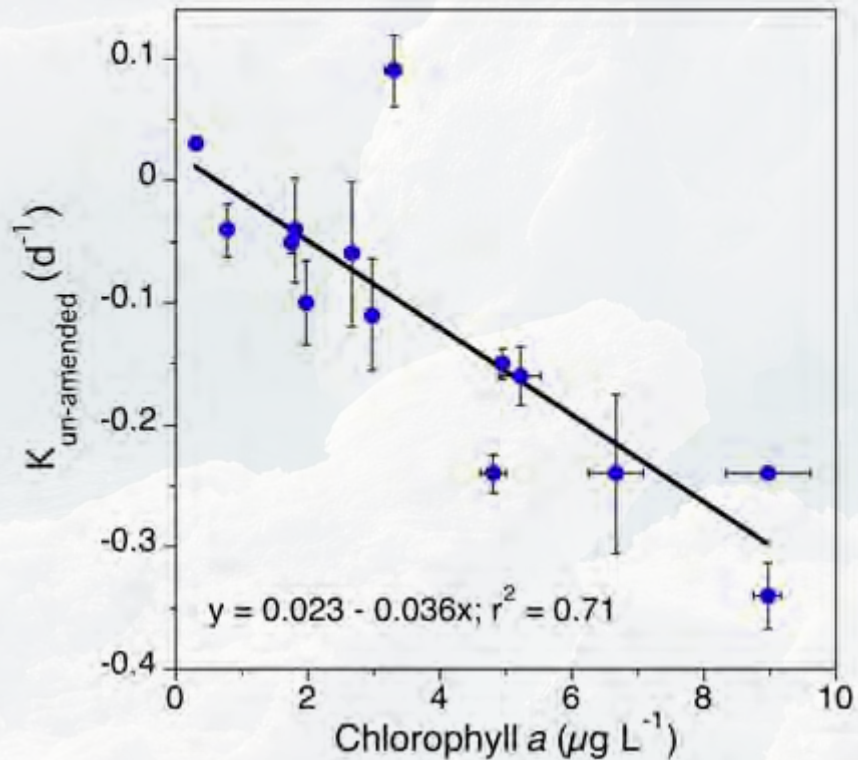


MICROZOOPLANKTON

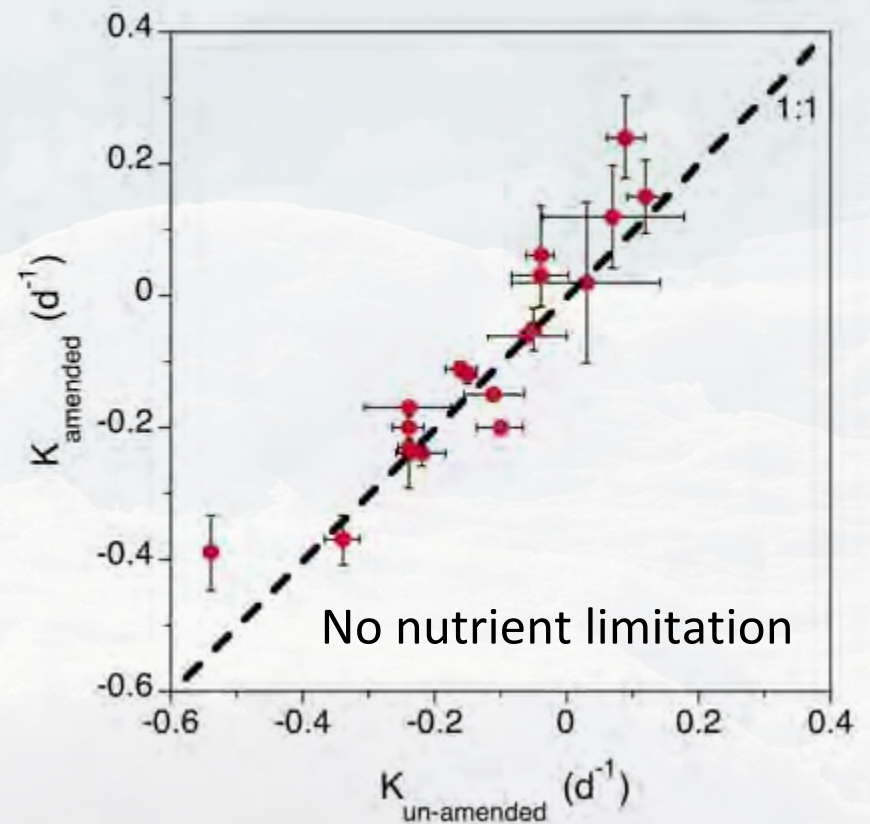




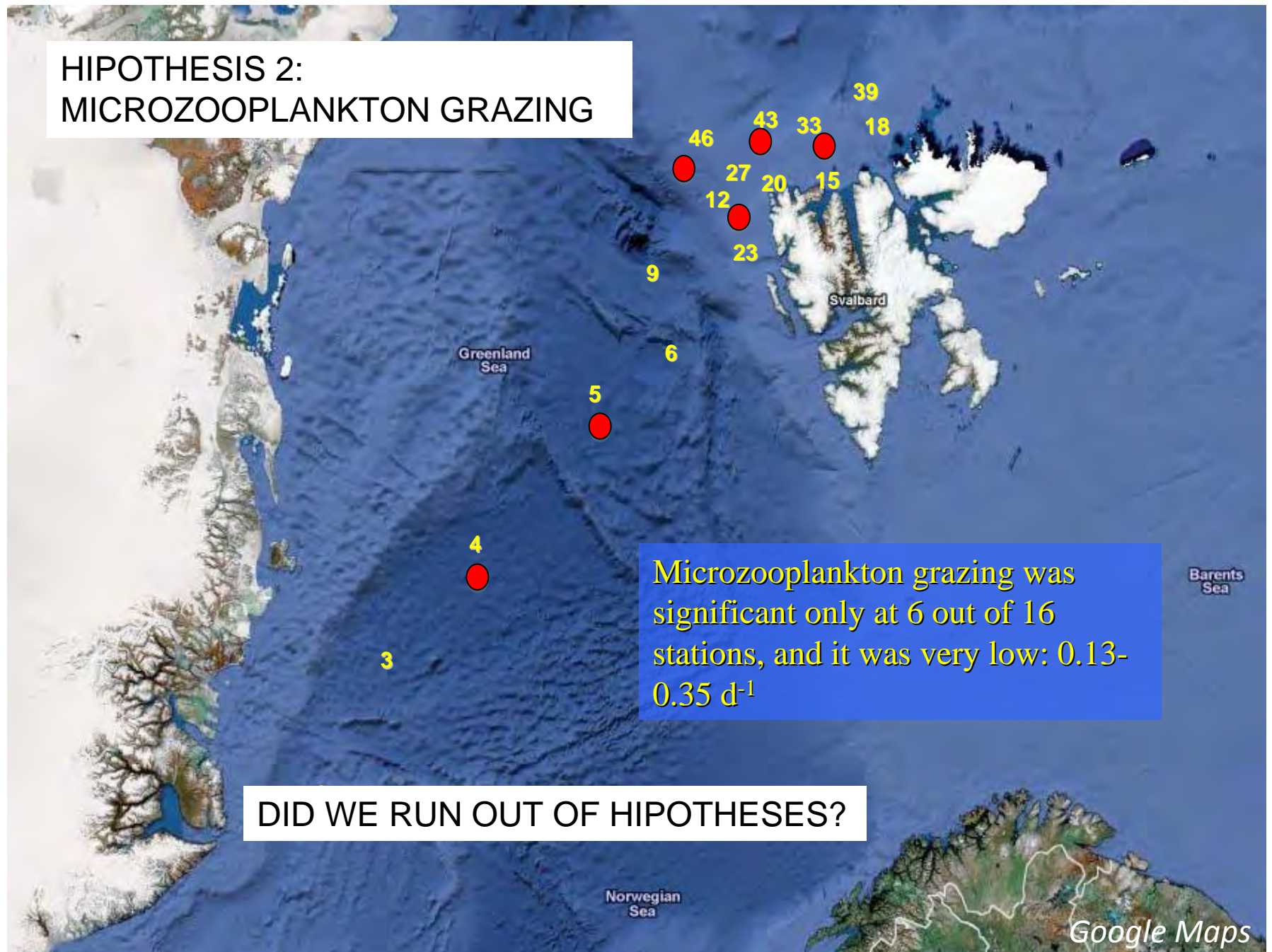
Biomass dependent mortality



HIPOTHESIS 1: NUTRIENT LIMITATION

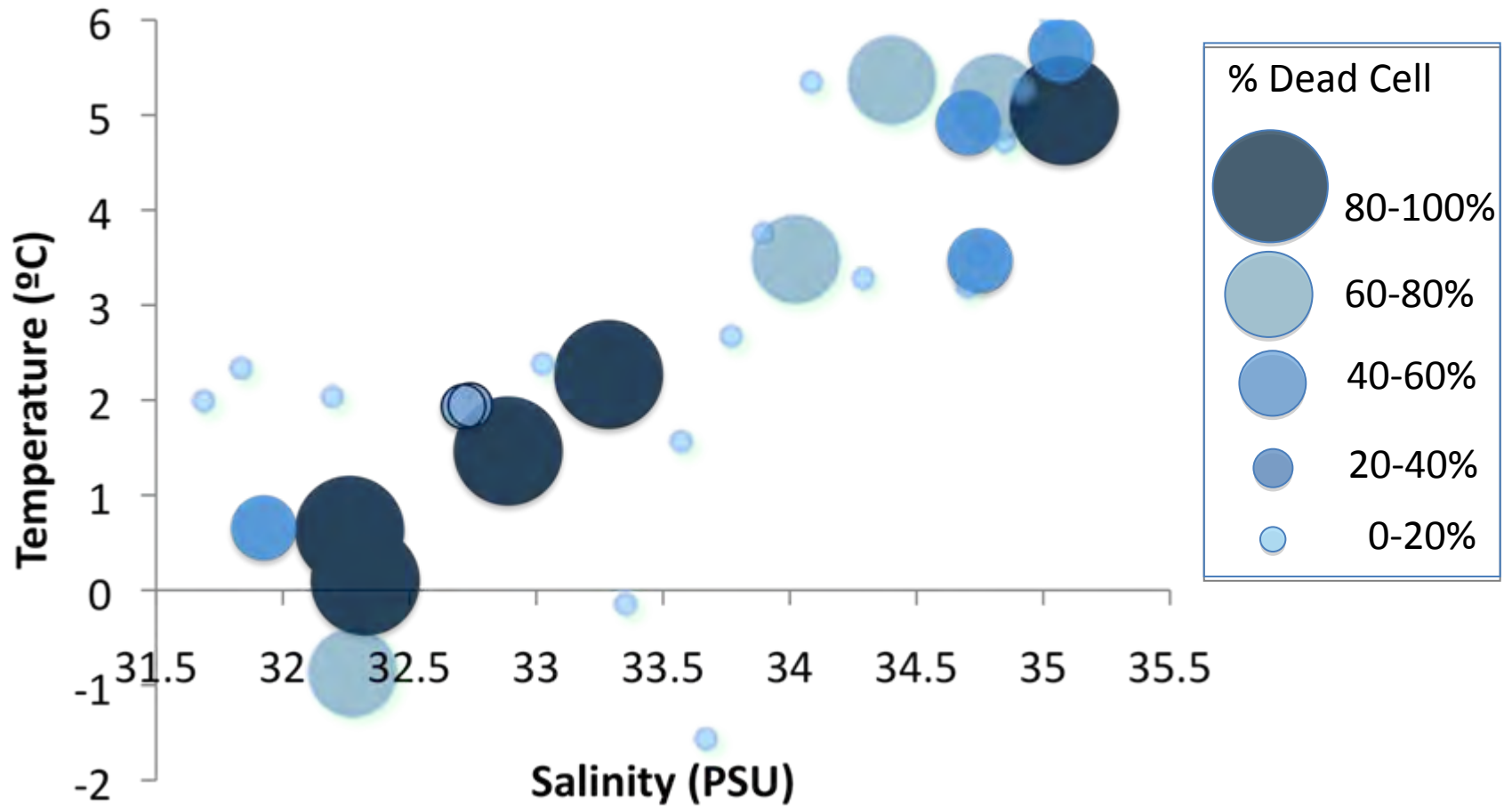


HIPOTHESIS 2: MICROZOOPLANKTON GRAZING



DID WE RUN OUT OF HIPOTHESES?

Natural *P. pouchetii* mortality (cell digestion assay which tests cell membrane permeability)



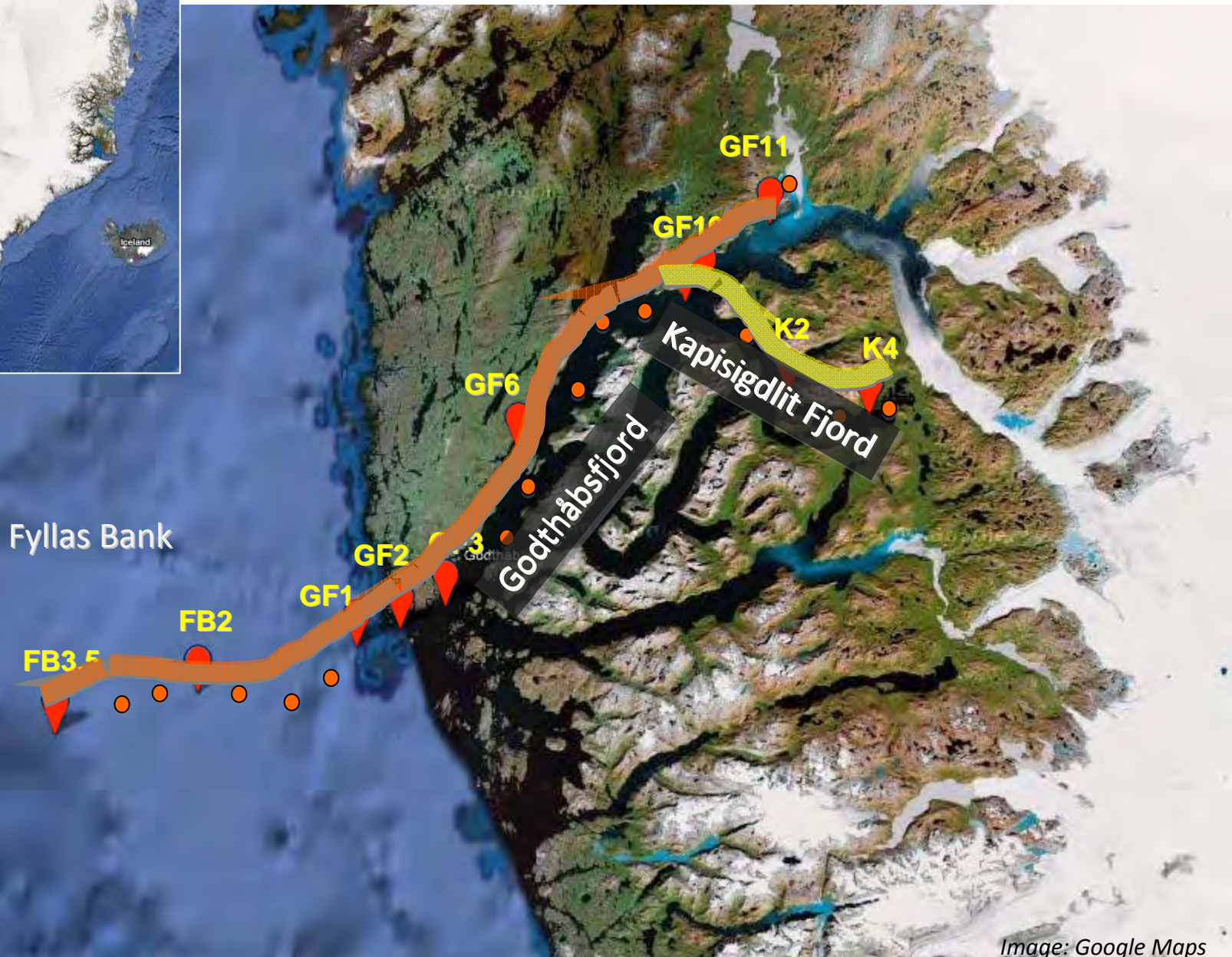
After Lasternas and Agustí 2011

Summary High Arctic

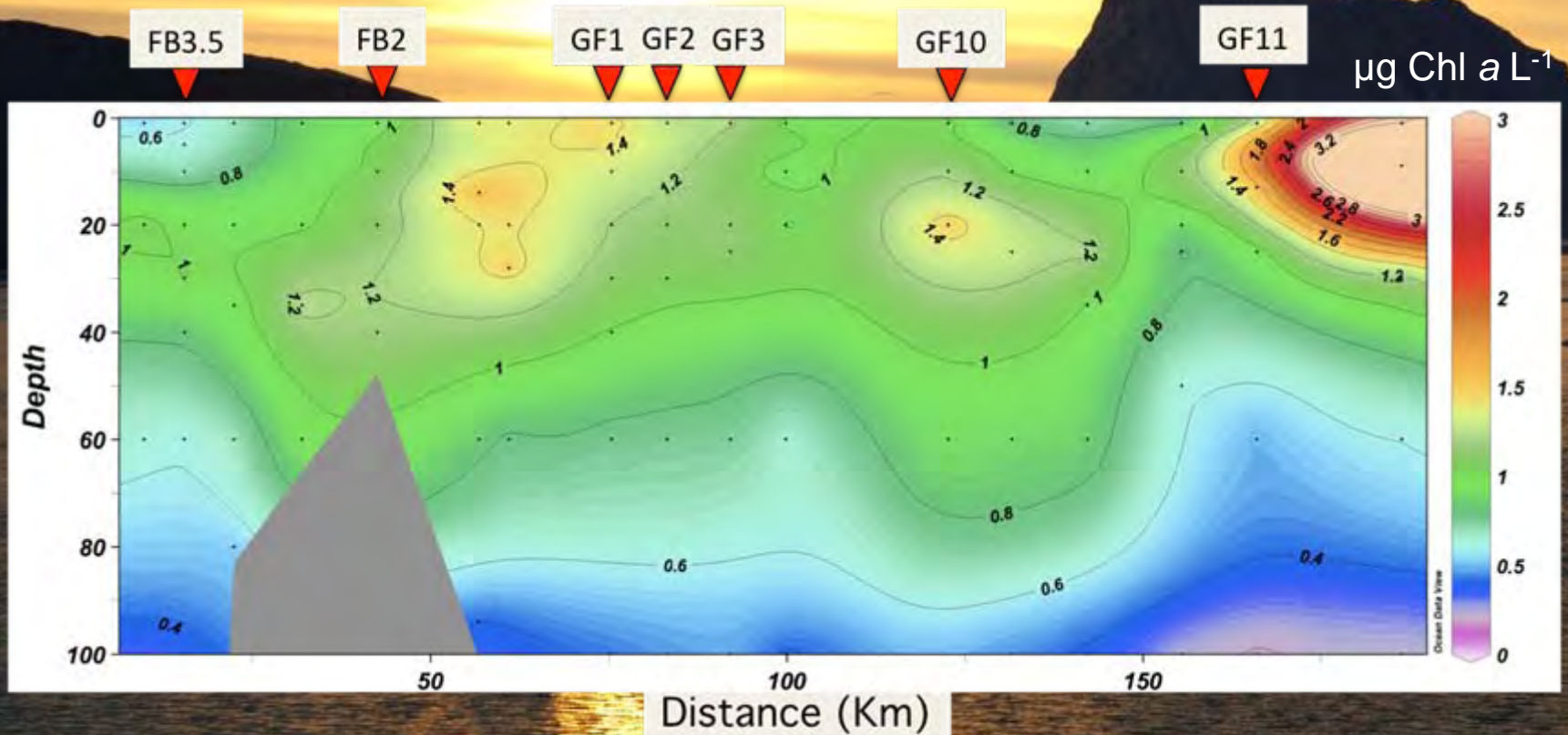


In high Arctic waters north and west Svalbard Islands, during July 2007, we faced a senescent community, in which many organisms were dying, most likely not result of microzooplankton grazing.

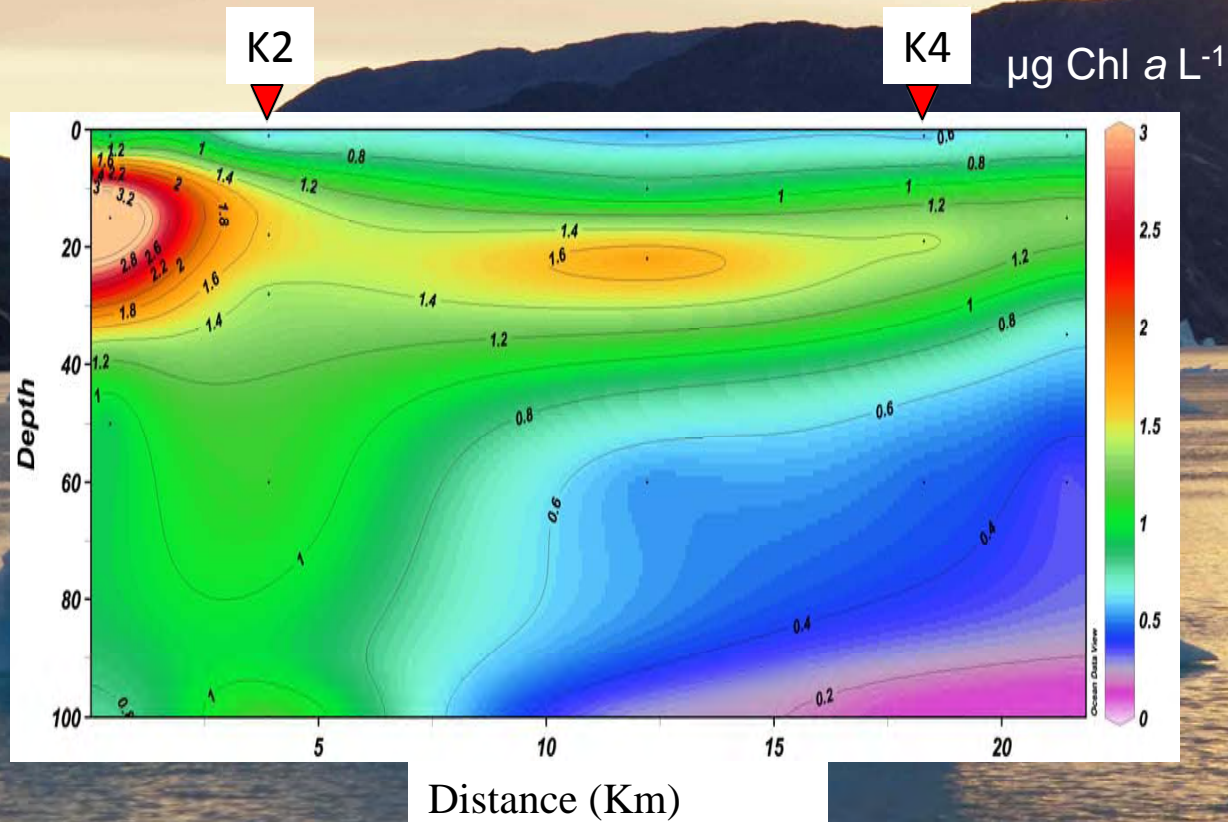
WEST GREENLAND WATERS JUNE 2010 SAMPLING STATIONS



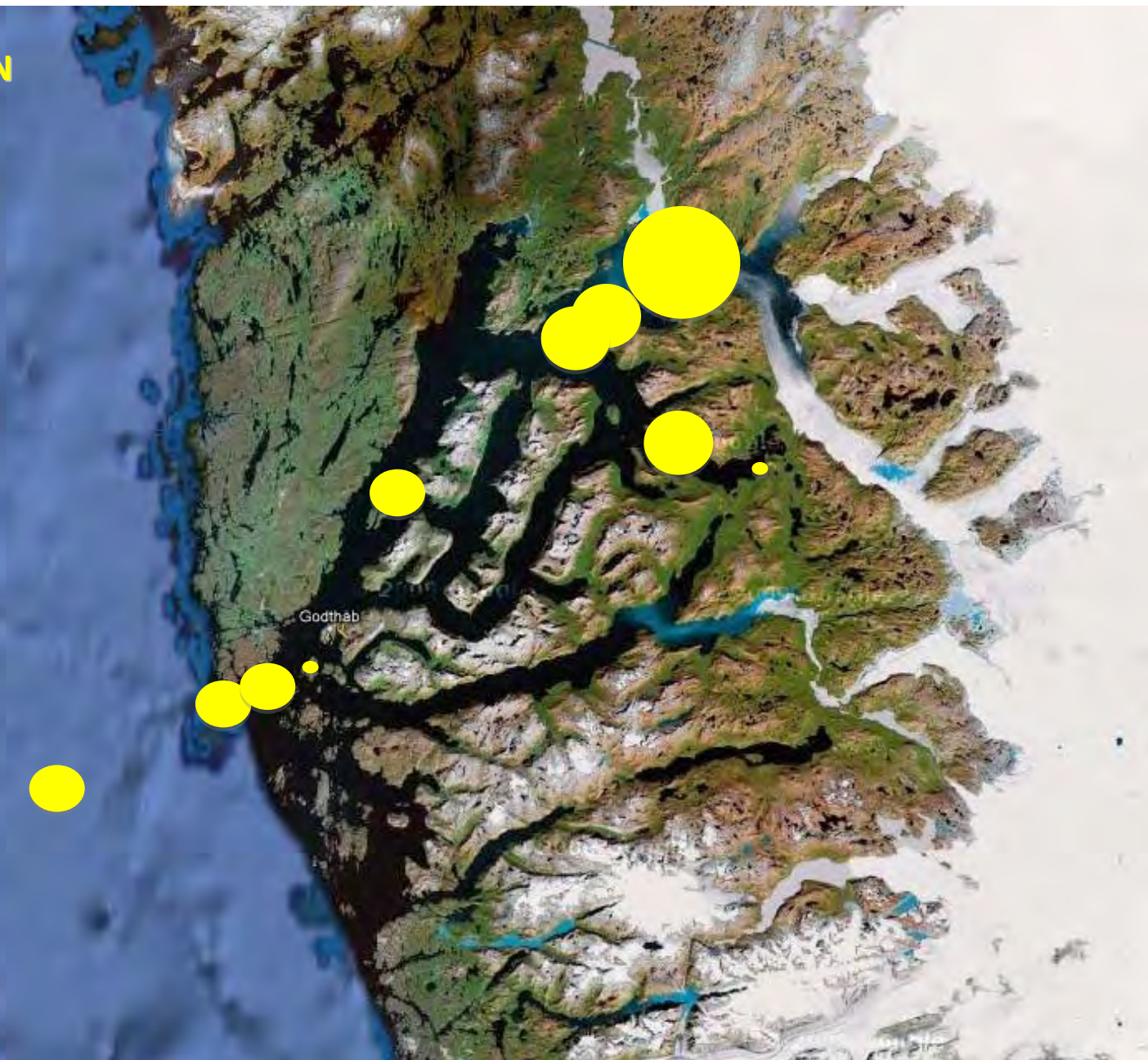
Chlorophyll *a* in the Godthåbsfjord



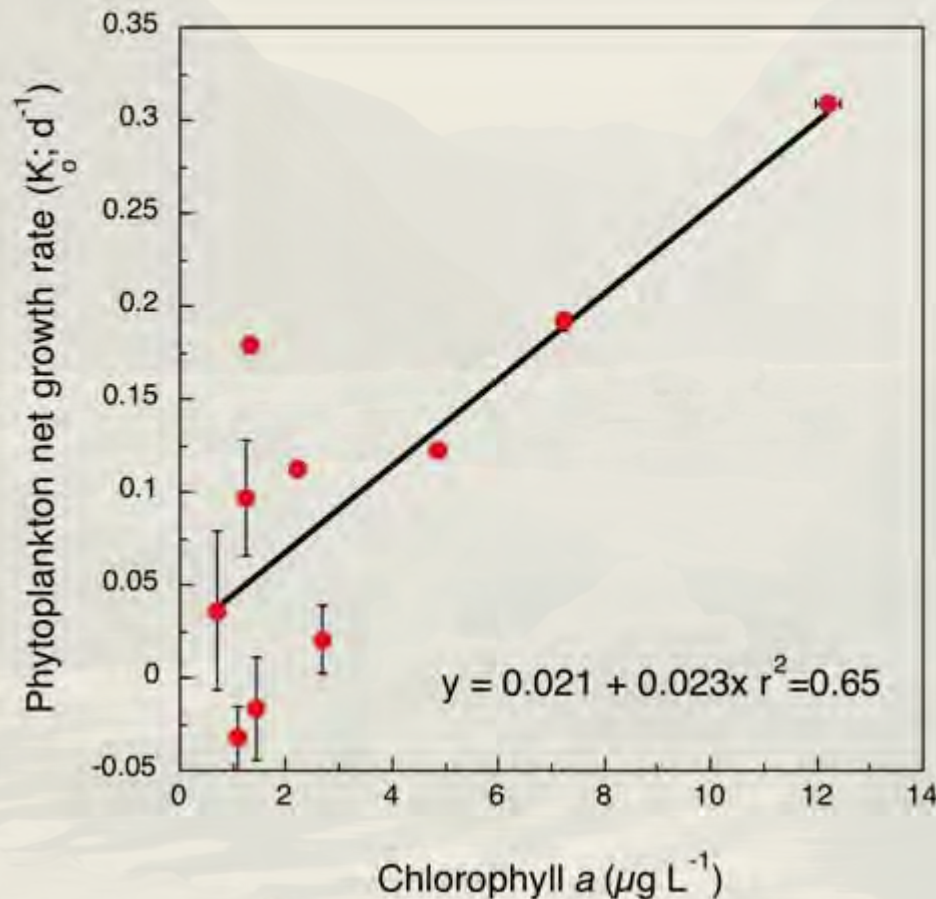
Chlorophyll *a* in the Kapisigdlit Fjord



NET PHYTOPLANKTON GROWTH RATES (d⁻¹)

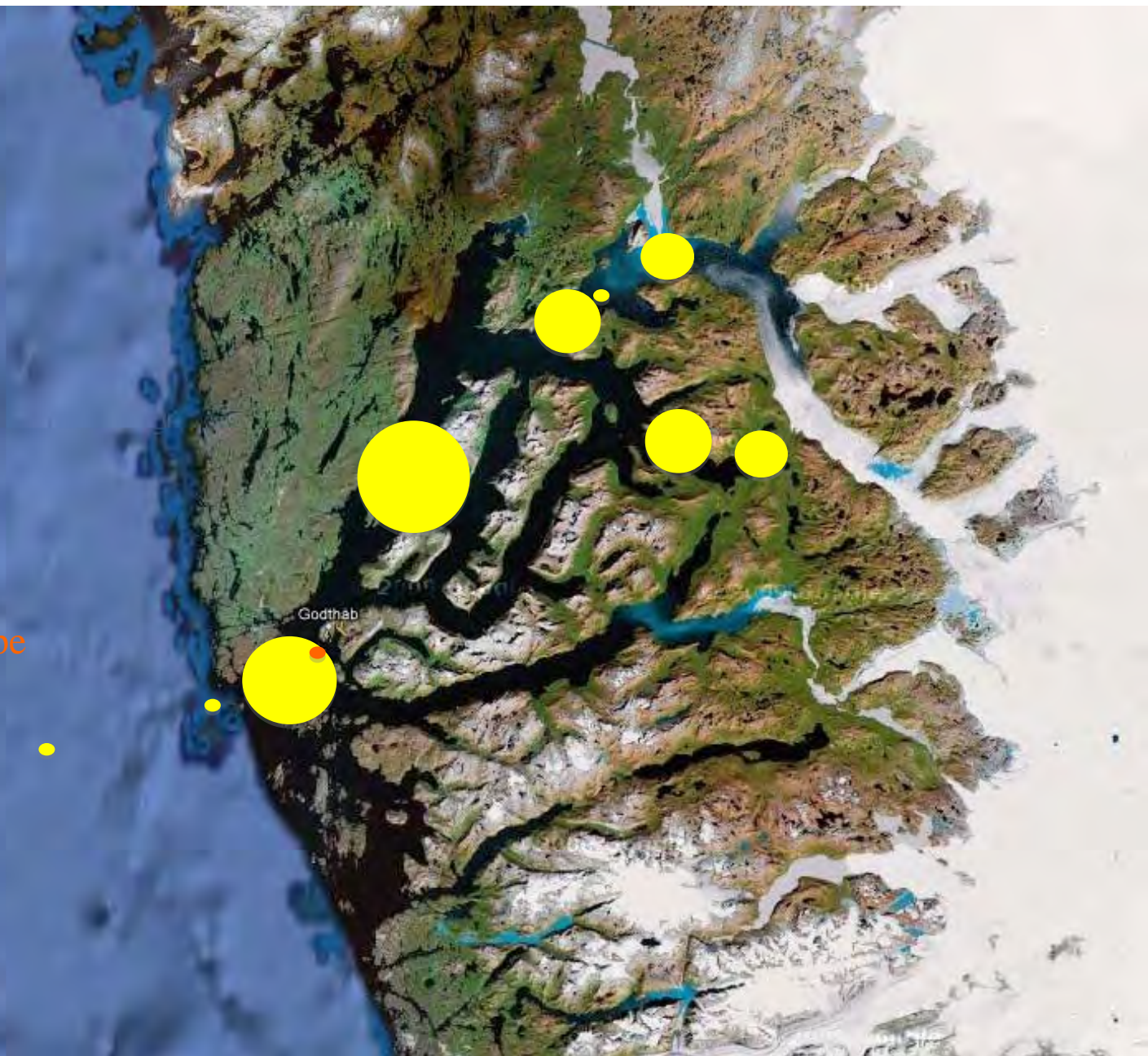


Was phytoplankton growth dependent on biomass?

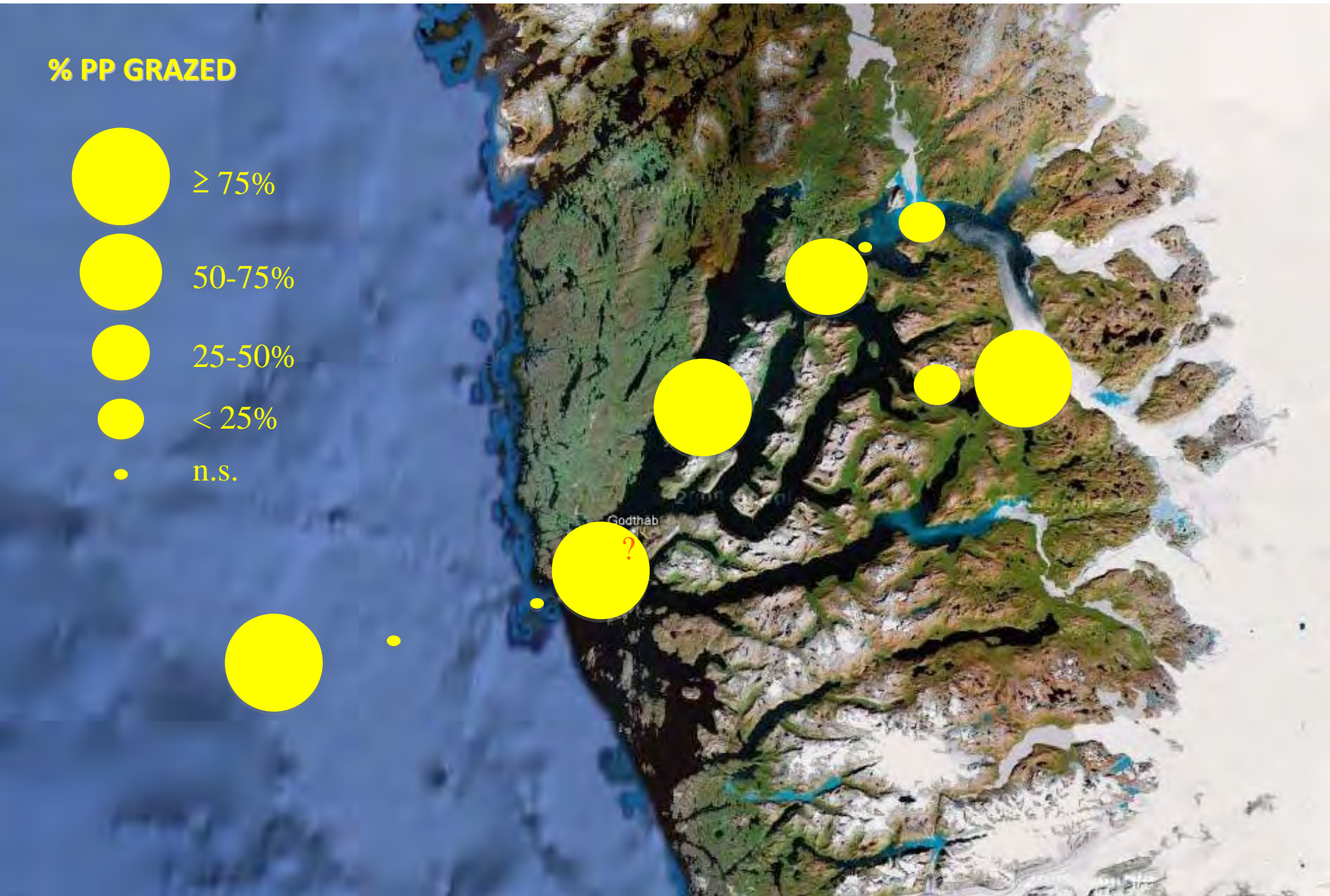
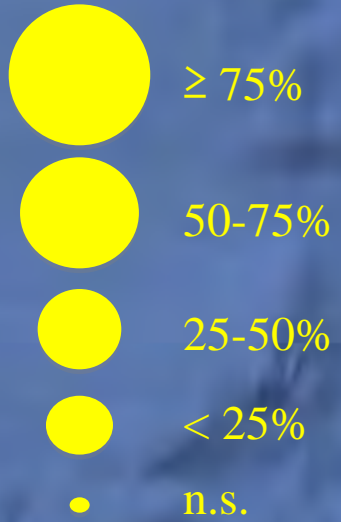


Phytoplankton growth rates were biomass-dependent. This seems to indicate the bloom was still developing.

Microzooplankton grazing rates (d^{-1})



% PP GRAZED



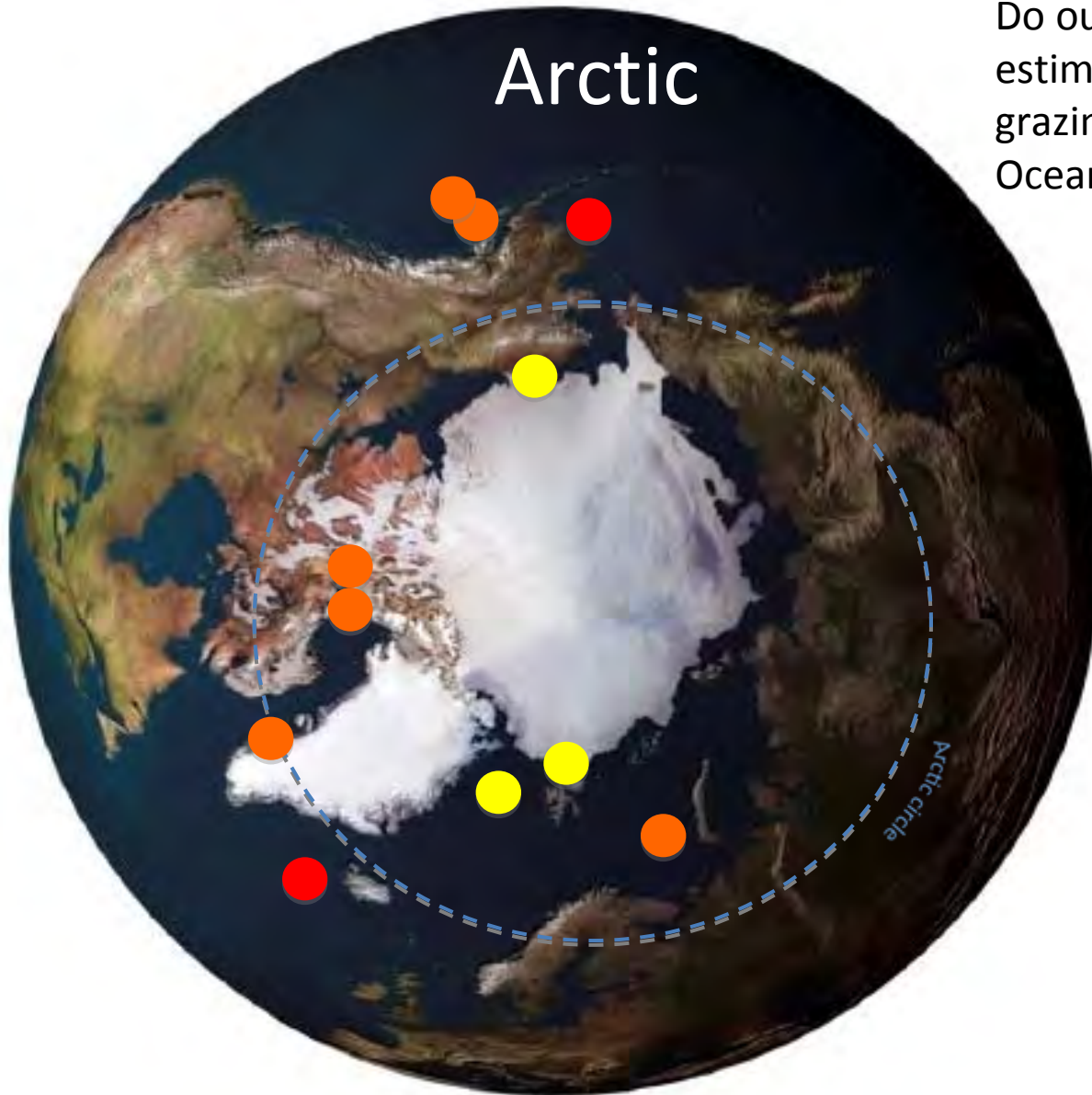
Summary SW Greenland fjord

In the Godthåbsfjord system and adjacent waters we found a phytoplankton community expanding from the glacier out, heavily grazed in the middle part, but uncoupled from microzooplankton grazing in the inner and outer part of the fjord.

No much PP seems to be exported out of the fjord.

Arctic

Do our data compare with previous estimates of microzooplankton grazing in the Arctic and Sub-Arctic Ocean?



% PP grazed daily

Yellow dot: 0 – 30%

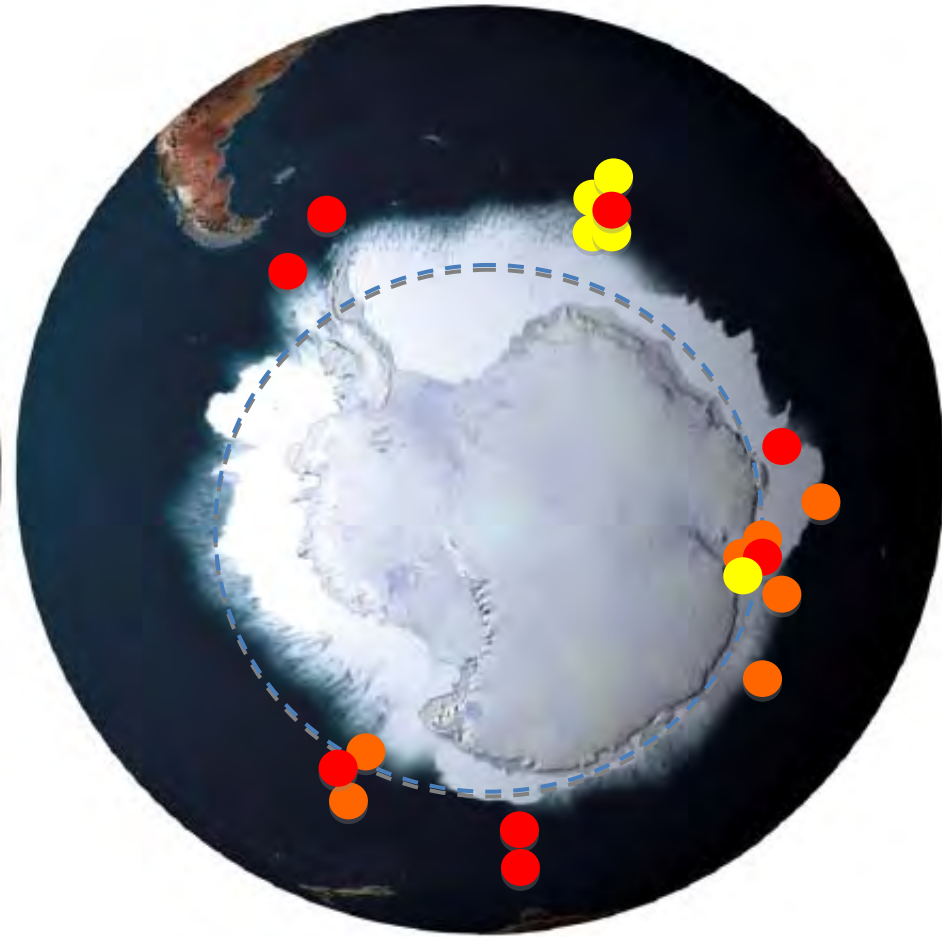
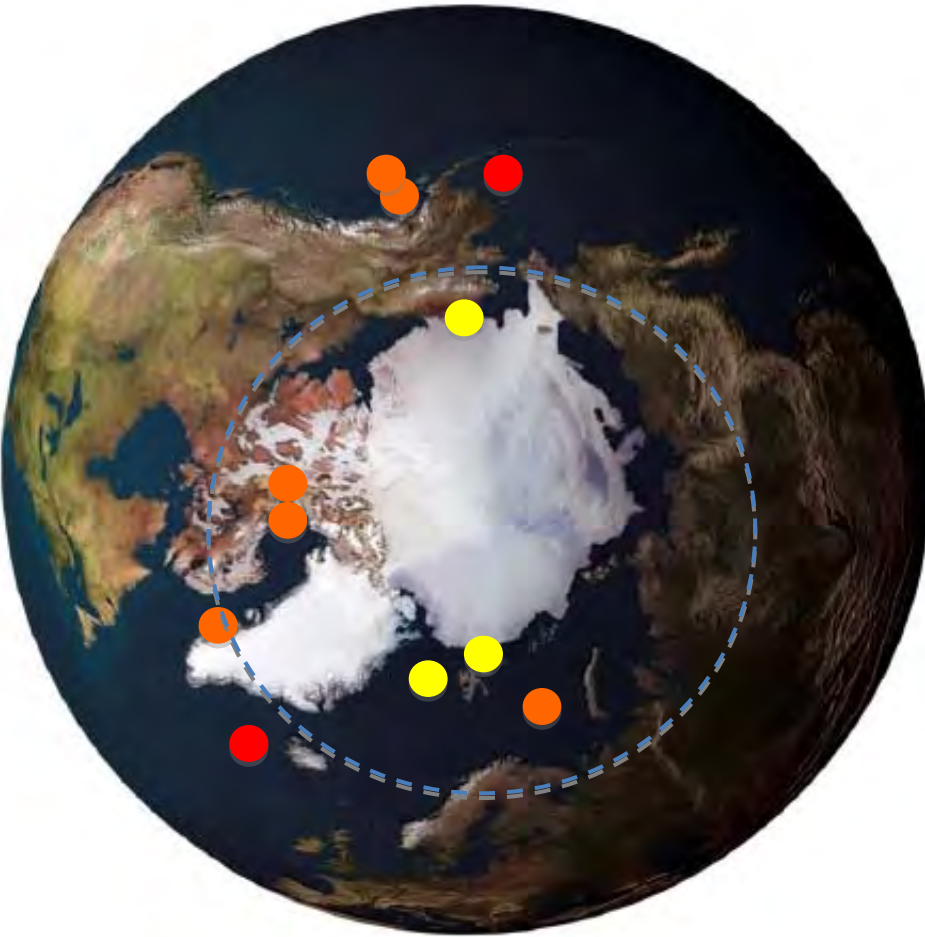
Orange dot: 30 – 80%

Red dot: > 80 %

Gifford et al. 1995
Olson et al. 2002
Paranjape 1987
Sherr et al. 2009
Strom and Welschmeyer 1991
Strom et al. 2007
Verity et al. 2002

Arctic

Antarctic



% PP grazed daily

- 0 – 30%
- 30-80%
- > 80 %

Burkill et al. 1995
 Froneman et al. 1996
 Froneman et al. 1997a
 Froneman et al. 1997b
 Froneman et al. 2004
 Froneman & Perissinotto
 1996

Landry et al. 2002
 Landry et al. 2001
 Li et al. 2001
 Pearce et al. 2010 Safi et
 al. 2007
 Selph et al. 2001
 Tsuda & Kawaguchi 1997

Thanks!

